

## ABSTRACT OF THE DISCLOSURE

A routing methodology for constructing multiple loop-free routes within a network of nodes executing the methodology. The method is capable of generating shortest-distance routing within the network and is not subject to the counting-to-infinity problem to which conventional distance-vector routing protocols are subject. By way of example the method comprises computing link distances  $D_j^i$  to generate routing graph  $SG_j$ . The nodes exchange distance and status information and upon receiving increasing distance information diffusing computations are performed. The information collected is used to maintain routing tables, from which shortest-path routes may be selected according to loop-free invariant (LFI) conditions.